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DEPARTMENT OF LABOR
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OCCUPATIONAL HYGIENE / INDOOR AIR QUALITY PROGRAM
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DECONTAMINATION AND CLEANUP OF LEAD DUST

Guidance for Remedial Cleaning Personnel

Introduction

The Division of Occupational Safety (DOS) has investigated a number of facilities where lead contamination of office space has occurred. This could be the result of poorly controlled renovation work or contamination due to previous occupancy (such as firing ranges). Although lead dust tends to settle out of the air, dust that is continually disturbed and re-circulated has the potential to contaminate all objects and surfaces, including desks, clothing, food, etc. Some of this dust can then be inhaled and ingested. Therefore, in order to prevent exposure to lead dust, a thorough cleanup is required.



This document provides guidance for people who are responsible for cleaning up lead dust in the workplace. This cleanup may be done by in-house personnel who are properly trained or by outside contractors. While this document focuses on lead dust, similar procedures can be used for cleanup of other types of potentially toxic dusts or particles.

*Note-This document is **not** designed to tell you how to remove lead paint. It is designed to provide you with guidance on cleanup of residue dust on surfaces.*

How does lead affect the body?

Adults can be exposed to lead either by breathing in dust or fumes, or by eating, drinking, smoking or handling objects in a contaminated environment – and accidentally swallowing lead dust. With continued exposure lead can slowly build up in the body, and symptoms may hardly be noticed. However, over time elevated levels of lead in the body can damage the brain, blood, nerves, kidneys and reproductive organs. In addition, recent studies show that lead probably causes cancer. It is generally agreed that exposures to cancer causing agents should be kept as low as feasible.

Young children are especially affected by lead. Lead dust can collect on clothes when employees are in a contaminated environment. When those clothes are worn home, the lead can contaminate employees' cars and homes. Young children can then be poisoned through inhalation or ingestion of the dust.

How much lead is too much?

While there are standards set by OSHA (Occupational Safety and Health Administration) for the amount of lead dust workers are allowed to be exposed to in the **air**, there are no legal standards for the lead content of **surface dust** in the workplace, nor is it known how much lead on surfaces is a danger to adults. In its instructions to inspectors, OSHA cites a former rule of the US Department of Housing and Urban Development (HUD). That document permitted no more than 200 mcg/ft² (micrograms per square foot) of lead on floors upon completion of a residential lead removal project. That HUD rule has since been superseded by an EPA (Environmental Protection Agency) regulation establishing 40 mcg/ft.² as a maximum level of lead that should be on floors after lead abatement.

Training/Qualifications

Workers who clean up a lead-contaminated worksite should have thorough training in the hazards of lead and in safe work practices. While workers who perform residential “deleading” under the Massachusetts Lead Poisoning Law must comply with certain training, licensing and work practice regulations, no such rules apply to general clean-ups of lead dust. However, the Division of Occupational Safety (DOS) does recommend that workers and supervisors conducting a lead dust cleanup have as a minimum the one-day Massachusetts Lead-Safe Renovator course. These courses cover the hazards of lead, safe work practices, personal protective equipment, and applicable state and federal regulations. Anyone performing cleanup of lead dust is encouraged to follow the state regulations (454CMR 22.00) specifying safe work practices. Contact DOS’s Asbestos and Lead Licensing Office, tel. 617-727-7047, for further information.

Methods for Cleaning

Lead-contaminated objects that are porous or materials that may suffer damage from water may not be able to be sufficiently decontaminated by these methods and should be discarded.



Gross debris, paint chips, etc. should first be removed using either a vacuum with a HEPA filter or by spraying the materials with water in a spray bottle and picking up chips or large pieces of lead contaminated debris by hand. Note-A wet/dry HEPA unit is ideal for working with leaded dust clean up.

1. HEPA Vacuum - Begin with high areas first. Clean ceilings and walls working downward. Vacuum all surfaces in the room. Work in the direction furthest from the entry door toward it.
2. Wet clean – Following thorough HEPA vacuuming, wash all surfaces with any suitable cleaning detergent following the same cleaning pattern (high to low/ furthest from and toward entrance). Change the cleaning solution as it becomes dirty. Rinse all areas with a fresh cloth/mop. Do not reuse contaminated mops and cloths. Use a three-bucket system for cleaning. (Detergent solution in first bucket/ rinse water for mop in second/ surface rinse on floor).
3. HEPA vacuum again as required in Step 1.
4. Properly dispose of lead contaminated materials.

General Tip: **Work Wet, Work Smart, and Work Clean. DO NOT GENERATE DUSTS.** It is easier to effectively clean an area when dusts are not being generated to resettle on previously cleaned areas! Worker exposures may be high during wet sweeping.

Safe Work Practices

To protect both building occupants and the workers who are cleaning up the lead dust, the following precautions should be taken during a lead dust clean-up operation.

Separate contaminated areas from other areas

- Do not permit other people in the work area.
- Work in one room at a time.

Prevent dust from migrating to other areas

- Seal doors, windows and other openings between construction areas and other areas with an airtight barrier, such as fire-rated polyethylene; seal both sides (inside the construction area, and inside the adjacent area) to provide a secondary dust barrier and prevent the doors and windows from being used (post alternative emergency exits, if applicable).
- Work areas must be under negative pressure in relation to adjacent areas; negative pressure means that more air is exhausted from the area than is supplied so that lead is contained within the work area, and no lead dust can enter other areas; exhaust air must be filtered with a HEPA filter.



Protect de-contamination workers

- Use a HEPA (high-efficiency particulate air) vacuum – never use a conventional vacuum. A HEPA vacuum removes 99.97% of particles that are less than 0.3 microns in size.
- Never use compressed air; never dry sweep.
- Workers must wear a respirator which is approved by NIOSH and has N100, P100 or R100 filters (the cartridges are usually purple); respirators must be fit-tested to insure proper seal, and employees must be medically screened and trained prior to wearing a respirator (see the OSHA Respirator Standard, 29 CFR 1910.134).
- Workers must wear full-body protective clothing, head covering and shoes (or shoe covers).
- Eating, drinking and smoking are prohibited in work areas.
- Workers must wash hands and face before eating, drinking or smoking.
- Workers must remove work clothes and shoes before leaving the work area, and seal work clothes in plastic.
- Shower and wash hair as soon as possible after leaving the work area.
- Non-disposable work clothes must be washed separately from other clothes.

Blood lead monitoring

Workers who do lead de-contamination work regularly should have periodic blood lead tests (approximately every 2-3 months). If they are conducting a one-time cleanup, they should have a blood lead test before and after the job. For details on legal requirements, see the OSHA Standard for Lead Exposure in Construction (29 CFR 1926.62).

Lead dust testing

Conduct a clearance examination. Visually inspect all areas for cleanliness. No chips, dust or cleaning material haze should remain. If surfaces are going to be resealed or painted, it should be done after a visual inspection and before dust wipes are taken.

As noted above, there are no standards for surface dust in the workplace. However, the HUD-EPA-OSHA regulations and guidelines can be used for comparison. A few surfaces should be tested in each room. OSHA, an agency that protects workers, requires that wipe samples collected on surfaces in eating areas in workplaces not exceed 200 micrograms/square foot (mcg/ft²). HUD regulations, which were established for children, now follow the EPA (Environmental Protection Agency) regulation establishing 40 mcg/ft.² as a maximum level of lead that should occur on floors after lead paint removal. If the desired clearance is not achieved, repeat cleaning procedures until appropriate clearance levels are achieved.

Various protocols for collecting samples have been established by different organizations. For a copy of the protocol issued by the Massachusetts Childhood Lead Poisoning Prevention Program (CLPPP), contact CLPPP at (617) 284-8400, or the DOS Lead Registry (617-969-7177).

Dust lead samples should be analyzed by a laboratory certified by the National Lead Laboratory Accreditation Program (NLLAP) or the American Industrial Hygiene Association (for a listing of certified laboratories, go to www.aiha.org).

FOR MORE INFORMATION

Publications

HUD Technical Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing-Chapter 14 (Cleaning), <http://www.hud.gov/offices/lead/guidelines/hudguidelines/Ch14.pdf>

“Reducing Lead Hazards When Remodeling Your Home” (EPA, 1997); available at the National Lead Information Center, (800) 424-LEAD, www.epa.gov/lead/nlic.htm

“Preventing Indoor Air Quality Problems During Construction and Renovation” (MA Division of Occupational Safety, 1997); available at DOS (617) 969-7177, <http://www.mass.gov/dos/iag>

“Temporarily Reducing Lead Paint Hazards By Cleaning” (MA Childhood Lead Poisoning Prevention Program); available at (617) 284-8400, www.state.ma.us/dph/clppp/clean.htm

Government Agencies Involved in Worker Health and Safety

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